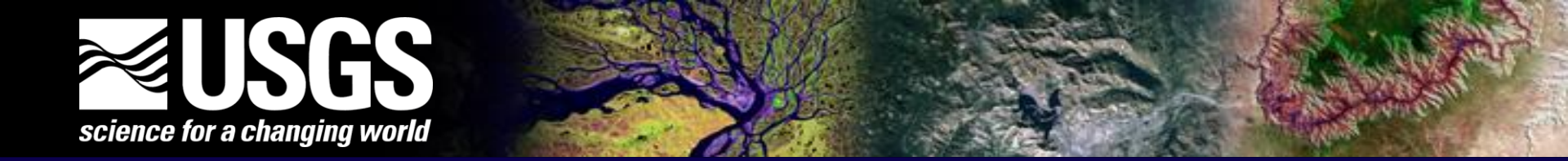
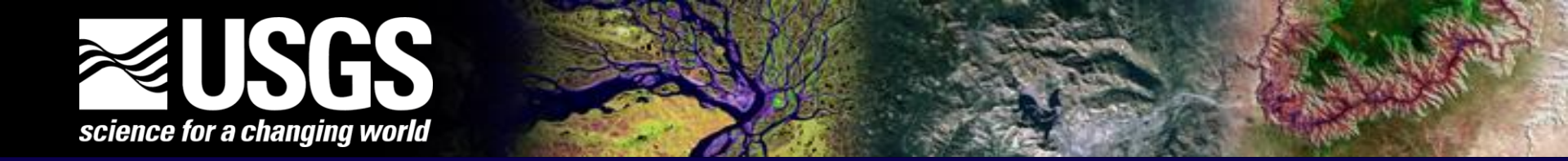


CURRENT USGS BUDGET PRIORITIES

U.S. Department of the Interior
U.S. Geological Survey

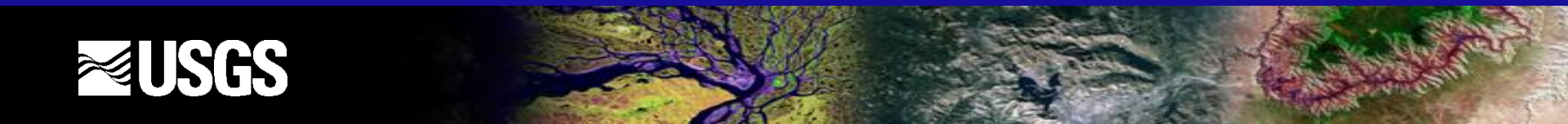


US TOPO
THE NATIONAL MAP

U.S. Department of the Interior
U.S. Geological Survey

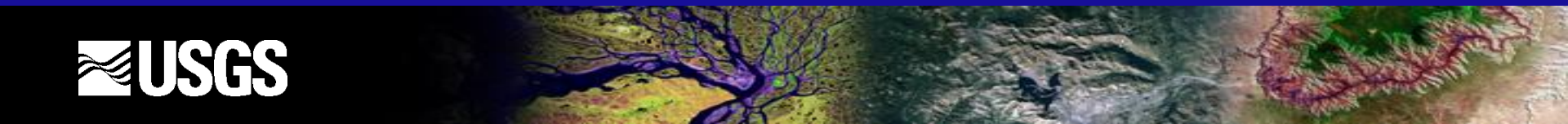
GEOGRAPHIC NAMES

- REVISIONS BY STATES PREFERED
  - USGS is lead federal agency on Board of Geographic Names
  - Funds available to support stewardship activities
  - Training provided



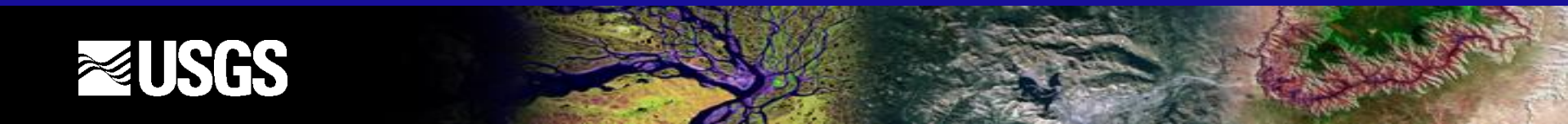
NATIONAL HYDROGRAPHIC DATASET

- REVISIONS BY STATES WITH STEWARDSHIP AGREEMENTS
  - Funds available to support stewardship activities
  - Funds are not allocated for data revision
  - Training provided



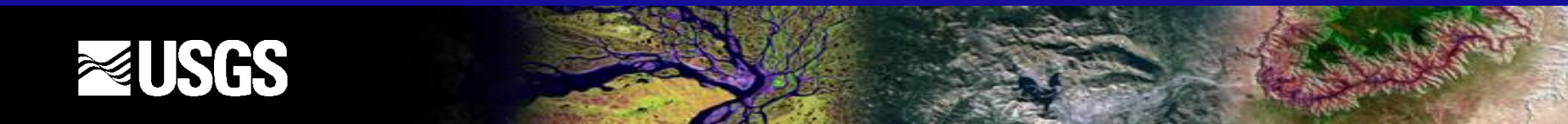
Boundaries

- Support US Topo and The National Map
- US Bureau of the Census Data



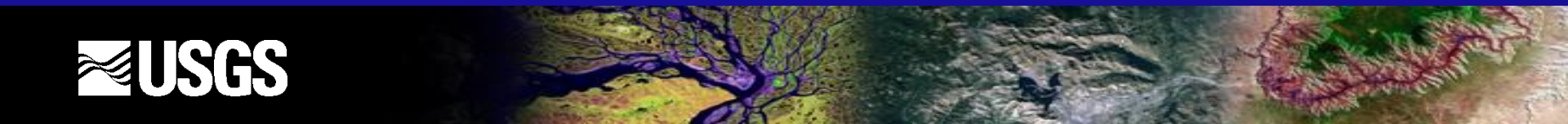
Transportation

- US Topo
  - Currently licensed dataset for roads
  - Plan for US BOC data in Fiscal Year 2014
  - Federal Railroad Administration(FRA)
- The National Map
  - US BOC roads
  - FRA



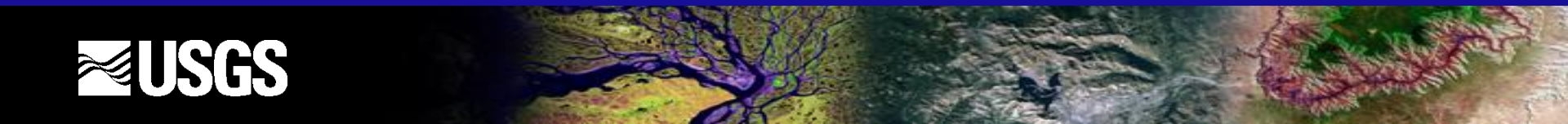
Structures

- US Topo
  - Plan is being developed
- The National Map
  - Same as above



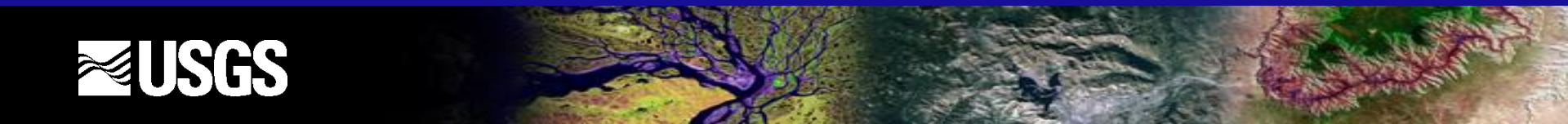
LAND COVER

- NATIONAL LAND COVER DATASET (NLCD)
  - 30 Meter
  - Derived from Landsat



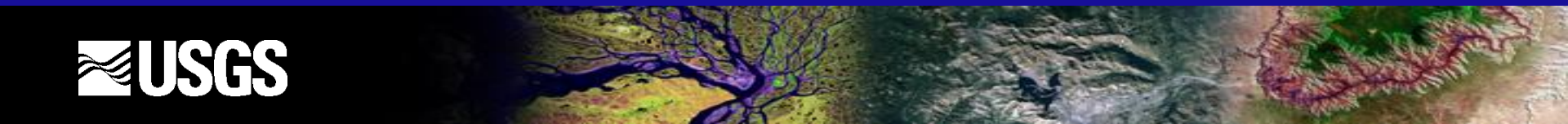
ORTHOPHOTOGRAPHY

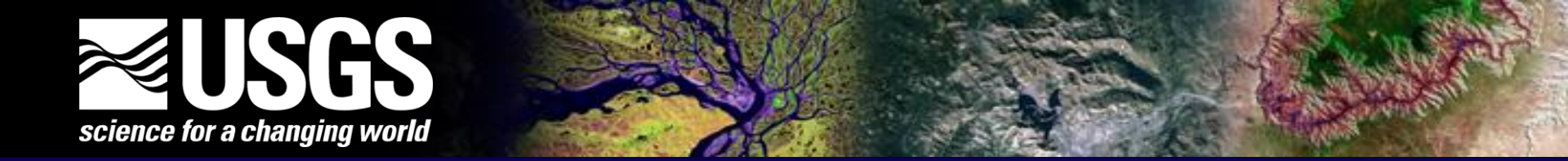
- NAIP
- HIGH RESOLUTION URBAN AREAS
  - NGA Funded



ELEVATION

- LIDAR
  - Quality Level 2 supported
    - 0.7 Meter bare earth DEM
    - 1 foot contour interval
    - USGS will pay up to 25%

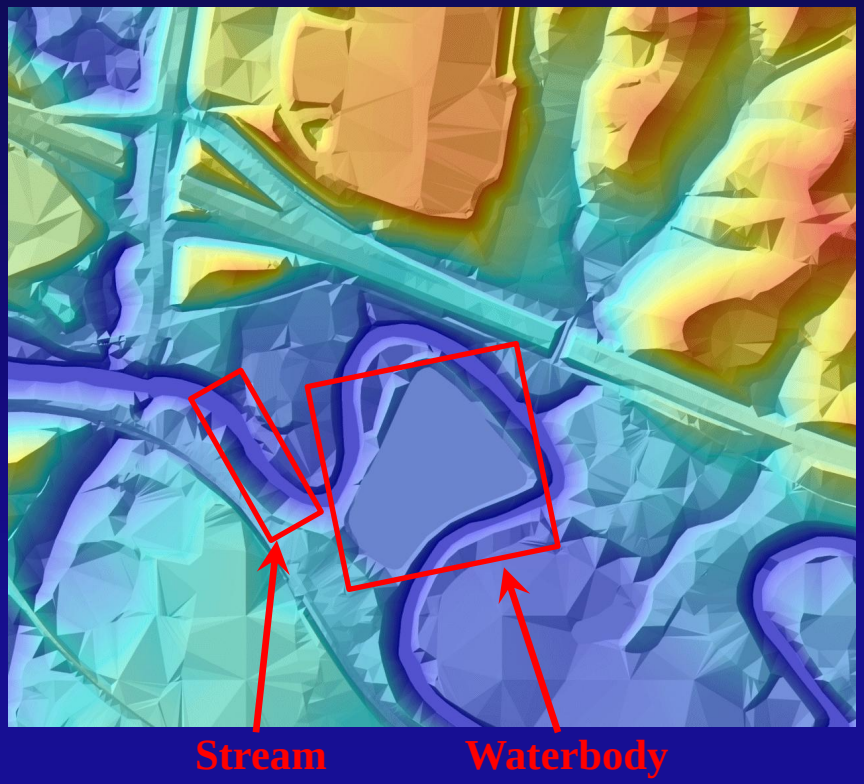




HYDRO TREATMENTS OF LIDAR-DERIVED DEMS

U.S. Department of the Interior
U.S. Geological Survey

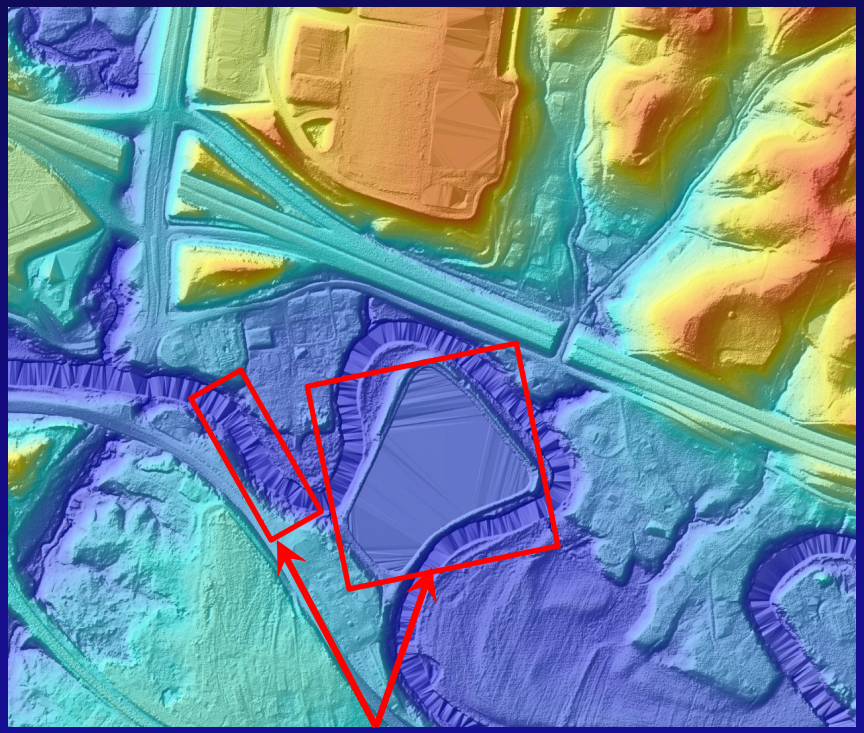
Stereo DTM (Topographic Surface)



- Reference image of the traditional stereo-compiled DTM
- Built from Masspoints and Breaklines
- Much coarser resolution than lidar
- Demonstrates the familiar and usually expected character of a topographic DEM
- Most notably, the “flat” water surfaces

USGS

Pure LiDAR (Topographic Surface)

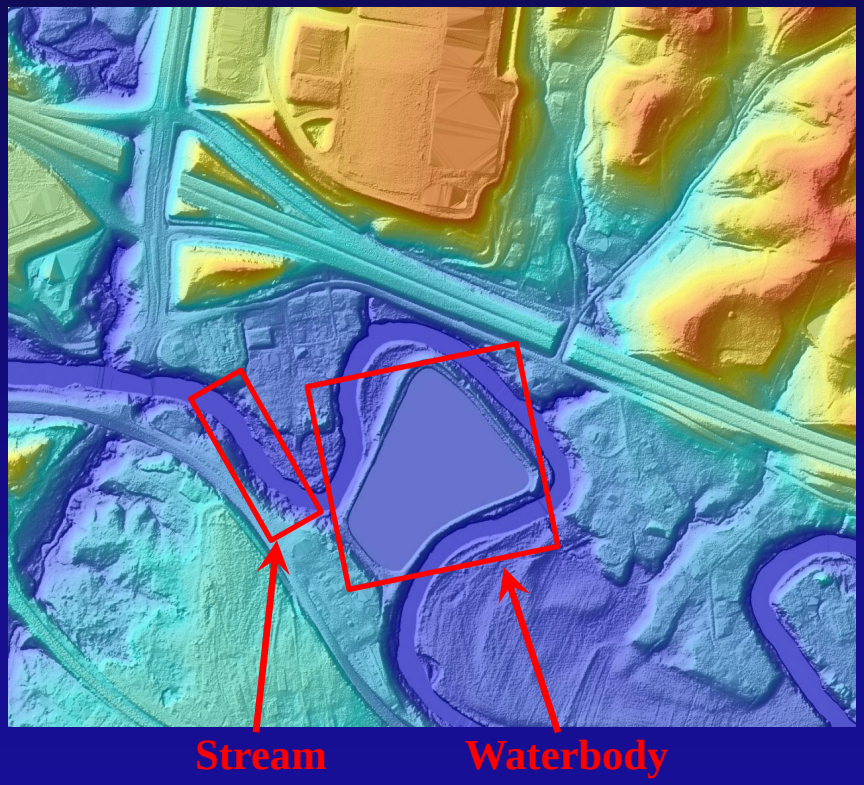


Tinning in Water Areas

- DEM created only using Bare-Earth lidar points
- Surface contains extensive triangulation artifacts ("tinning").
- Cause by the absence of:
  - Lidar returns from water
  - Breakline constraints that would define buildings, water, and other features (as in the Stereo DTM).
- Aesthetically and cartographically unacceptable to most users

USGS

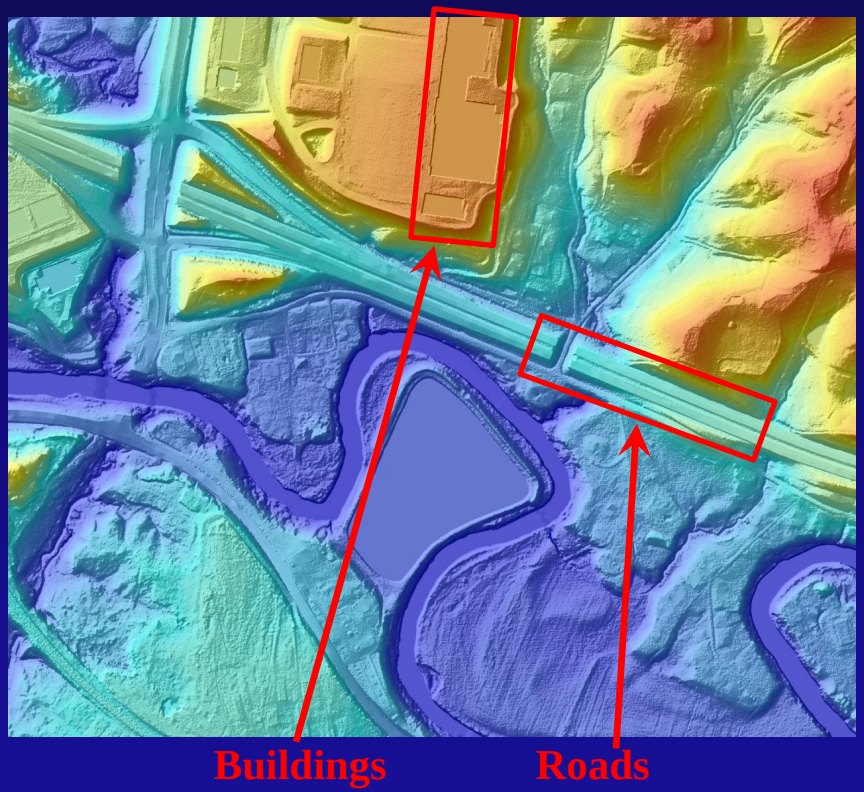
Hydro Flattened (Topographic Surface)



- The goal of the v13 Spec.
- Intent is to support the development of a consistent, acceptable character within the NED, suitable for contouring.
- Removes the most offensive pure lidar artifacts: those in the water.
  - Constant elevation for waterbodies.
  - Wide streams and rivers are flattened bank-to-bank and forced to flow downhill (monotonic).
- Carries ZERO implicit or explicit accuracy with regards to the represented water surface elevations – It is ONLY a Cartographic/Aesthetic enhancement.
- Building voids are too costly to correct.
- Most often achieved via the development and inclusion of hard breaklines.

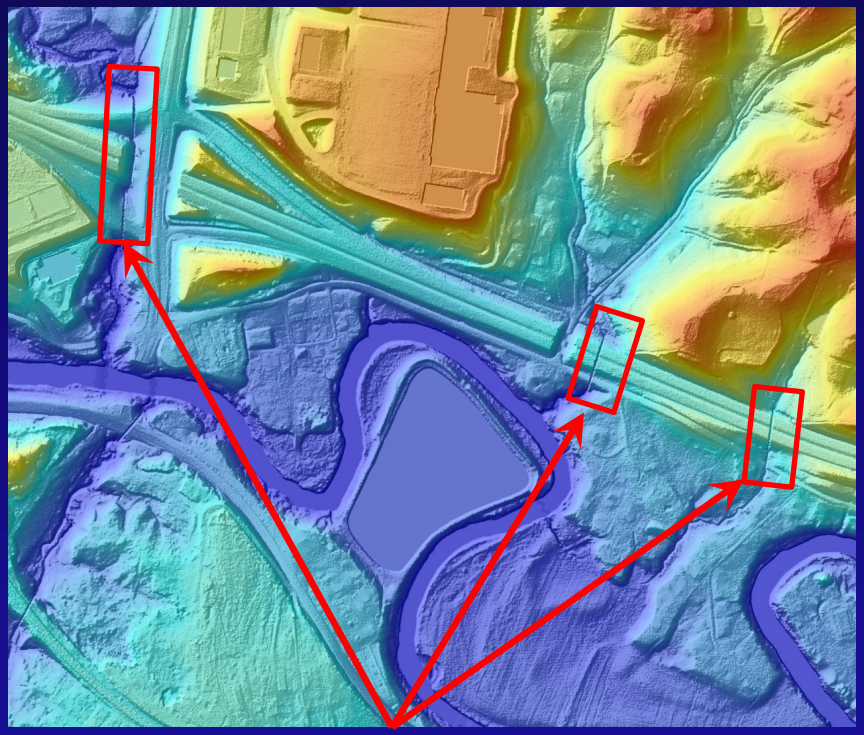
USGS

Full Breaklines (Topographic Surface)



- A further possible refinement of the Hydro Flattened surface
- Removes artifacts from building voids
- Refines the delineation of roads, single-line drainages, ridges, bridge crossings, etc.
- Requires the development of a large number of additional detailed breaklines
- A higher quality topographic surface, but significantly more expensive.
- Not cost effective for the NED.

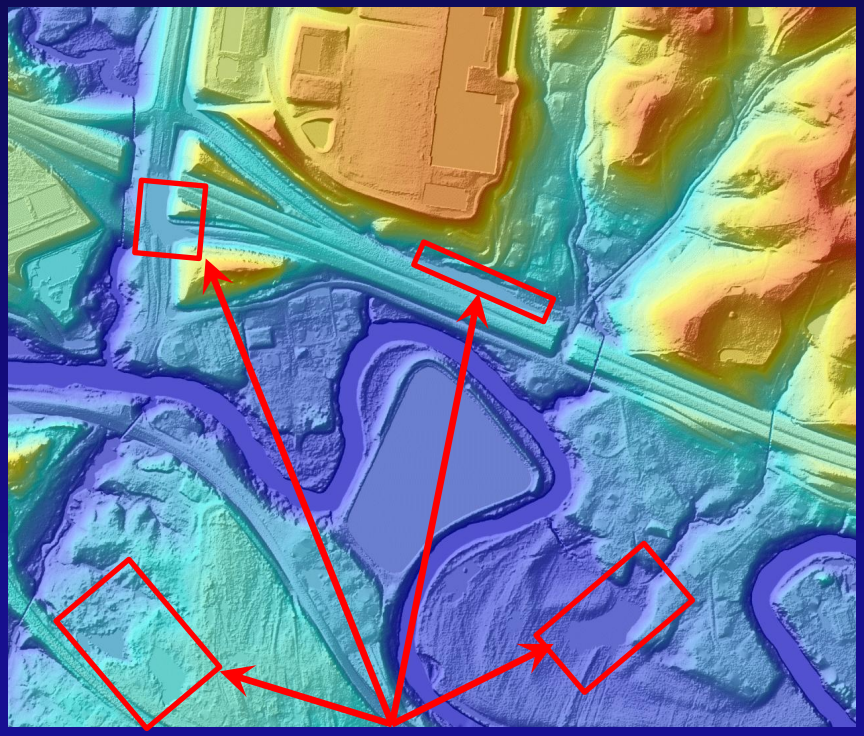
Hydro Enforced (Hydrologic Surface)



Culverts Cut Through Roads

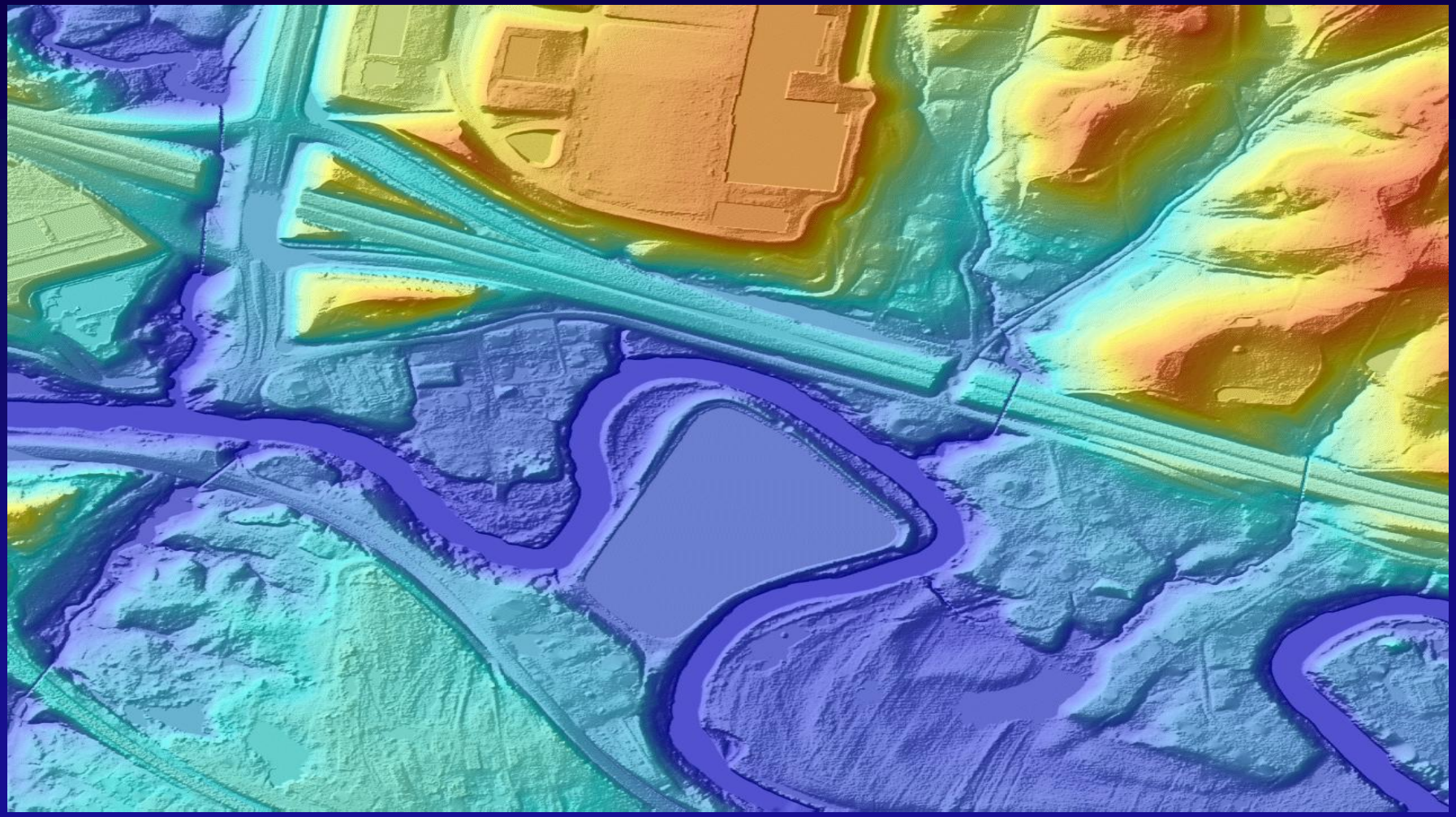
- Surface used by engineers in Hydraulic and Hydrologic (H&H) modeling.
- NOT to be used for traditional mapping (contours, etc.)
- Similar to Hydro Flattened with the addition of Single Line Breaklines: Pipelines, Culverts, Underground Streams, etc…
- Terrain is then cut away at bridges and culverts to model drain connectivity
- Water Surface Elevations (WSEL) are often set to known values (surveyed or historical).

Hydro Conditioned (Hydrologic Surface)



- Another type of surface used by engineers for H&H modeling.
- Similar to the Hydro Enforced surface, but with sinks filled
- Flow is continuous across the entire surface – no areas of unconnected internal drainage
- Often Achieved via ArcHydro or ArcGIS Spatial Analyist

Active Comparison Slide (click the buttons below)



Stereo DTM | Pure Lidar | Hydro Flattened | Full Breaklines | Hydro Enforced | Hydro Conditioned

USGS

References

- USGS-NGP v13 Draft LiDAR Base Specification
- Special Thanks to:
  - Hans Karl Heidemann
  - Jeremiah Ross Vinyard-Houx
  - James V Mauck